

REMARKS/ARGUMENTS

Favorable reconsideration of this application is requested in view of the above amendments and in light of the following remarks and discussion.

Claims 1-26 are pending. No claims are amended or newly added. No new matter is added.

In the outstanding Office Action, Claims 1, 9-12, and 20-26 were rejected under 35 U.S.C. § 102(b) as anticipated by Flanigan et al. (U.S. Patent No. 6,081,414, herein "Flanigan"). Claims 2, 7, 13, and 18 were rejected under 35 U.S.C. § 103(a) as obvious over Flanigan in view of Watanabe et al. (U.S. Patent No. 5,625,526, herein "Watanabe"). Claims 3-5 and 14-16 were rejected under 35 U.S.C. § 103(a) as obvious over Flanigan in view of Nagasaki (U.S. Patent No. 6,215,643, herein "Nagasaki"). Claims 6, 8, 17, and 19 were rejected under 35 U.S.C. § 103(a) as obvious over Flanigan in view of Nagasaki and further in view of Pashen (from F. Pashen published paper WID. Ann., 37, 69, 1889, herein "Pashen").

Regarding the rejection of Claims 1, 9-12, and 20-26 as anticipated by Flanigan, that rejection is respectfully traversed by the present response.

Independent Claim 1 recites:

A semiconductor device manufacturing method using a plasma processor, the plasma processor, comprising:
carrying the object to be processed into the vacuum processing chamber... and
between said processing of the object to be processed and processing of a subsequent object to be processed, circulating the insulating fluid in the flow path while the object to be processed is not in the vacuum processing chamber and no plasma is generated, and controlling pressure in the vacuum processing chamber to a predetermined pressure while supplying inert gas into the vacuum processing chamber.

Thus, the invention recited in independent Claim 1 is directed to controlling the pressure inside the vacuum processing chamber by supplying the inert gas into the vacuum

processing chamber between one object processing and a subsequent processing.¹ In one non-limiting example, the pressure ranges from 10-1000 mTorr.

As shown in Fig. 2, Flanigan is directed to an apparatus for improved biasing and retaining a workpiece in a plasma process chamber comprising a pedestal assembly (104), an electrostatic chuck (105) in the vacuum processing chamber disposed to be in contact with the block and made at least partly of an insulative material. The wafer is transferred to/from the chamber from/to a loadlock and is plasma processed. The vacuum in the chamber is controlled for PVD or other processes.

In operation, Flanigan describes that the wafer (102) is placed on the support surface (103) of the electrostatic chamber, and then air is drawn out of the chamber (100) via the vacuum pump (128) to create a low pressure environment (i.e., 1 mTorr to 5 Torr). Then, the reactant gas is introduced into the chamber (100) from one of the remote gas sources (130) and (134).² The section of Flanigan cited in the outstanding Office Action for the feature of supplying inert gas into the vacuum processing chamber between said processing of the object to be processed and processing of a subsequent object states:

In operation, a wafer 102 is placed on the support surface 103 of the electrostatic chuck 105. Air is drawn out of the chamber 100 via a vacuum pump 128 to create a low pressure environment (i.e. 1 mTorr to 5 Torr). **A reactant gas, preferably Argon, is introduced into the chamber 100 from one of the remote gas sources 130 or 134. The power supply 122 is energized which electrostatically clamps the wafer 102 to the support surface 103. Specifically, the power supply 122 applies a DC bias to the chucking electrodes 224. The high voltage level produced by the power supply 122 also ignites the gas into a plasma and biases the target 116 thereby causing the target material to sputter onto the wafer 102.**³

Although Flanigan describes a pressure of 1 mTorr-5 Torr, this pressure occurs during plasma processing, not during the idle state of the plasma processing between the

¹ The above-noted features are discussed in a non-limiting example in numbered paragraphs [0045]-[0050] of the published application.

² Flanigan, col. 7, lines 19-31.

³ Flanigan, col. 7, lines 19-31 (emphasis added).

processing of one object processing and the subsequent processing of another object as recited in independent Claim 1. Further, the argon gas is supplied during processing of the wafer, not between processing of one wafer and another. Accordingly, Flanigan does not teach or suggest all of the features recited in independent Claim 1, and Applicants respectfully submit that the rejection of independent Claim 1 is overcome for at least the reasons discussed above.

Independent Claim 12 recites substantially similar features to those discussed above regarding independent Claim 1 and patentably distinguishes for at least the same reasons.

Claims 9-11 and 20-26 each depend from one of independent Claims 1 and 12 and patentably distinguish over Flanigan for at least the same reasons as independent Claims 1 and 12 do.

Regarding the rejection of dependent Claims 2, 7, 13, and 18 as obvious over Flanigan in view of Watanabe, the rejection of dependent Claims 3-5 and 14-16 as obvious over Flanigan in view of Nagasaki, and the rejection of dependent Claims 6, 8, 17, and 19 as obvious over Flanigan in view of Nagasaki and further in view of Pashen, Applicants respectfully submit that none of these references remedies the deficiencies discussed above regarding Flanigan.

The outstanding Office Action relies on Watanabe for the feature of an electrostatic chuck system.⁴ However, Watanabe is devoid of, between said processing of the object to be processed and processing of a subsequent object, controlling pressure in the vacuum processing chamber to a predetermined pressure while supplying inert gas into the vacuum processing chamber as recited in independent Claims 1 and 12. Accordingly, Claims 2, 7, 13, and 18 patentably distinguish over any reasonable combination of the cited references for at least the same reasons as the claims from which they depend.

⁴ Outstanding Office Action, page 4, item 5.

The outstanding Office Action relies on Nagasaki for the feature of the particular resistivity of the insulative material.⁵ However, Nagasaki describes an electrostatic chuck and a method of making the chuck. Nagasaki is unrelated to the specific process recited in independent Claims 1 and 12 and fails to remedy the deficiencies of Flanigan discussed above.

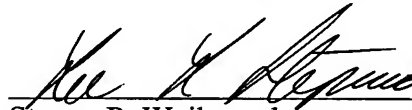
Paschen is unrelated to the specific process recited in independent Claims 1 and 12 and fails to remedy the deficiencies of Flanigan discussed above.

For the foregoing reasons, it is respectfully submitted that this application is now in condition for allowance. A Notice of Allowance for Claims 1-26 is earnestly solicited.

Should Examiner Dahimene deem that any further action is necessary to place this application in better form for allowance, Examiner Dahimene is encouraged to contact Applicants' undersigned representative at the below-listed telephone number.

Respectfully submitted,

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⁵ Outstanding Office Action, page 5, item 6.